PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB2004/003115	19.07.2004	18.07.2003

International Patent Classification (IPC) or both national classification and IPC
C01F11/22, C01F11/32, C01D3/18, C01D3/02, C01B9/08

Applicant
INEOS FLUOR HOLDINGS LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/GB2004/003115

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was field, unless otherwise indicated under this item.

   ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

   ☐ a sequence listing

   ☐ table(s) related to the sequence listing

   b. format of material:

   ☐ in written format

   ☐ in computer readable form

   c. time of filing/furnishing:

   ☐ contained in the international application as filed.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

Box No. II Priority

1. ☒ The following document has not been furnished:

   ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

   ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

   Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	3-10, 14-17
	No:	Claims	1,2,11-13,18,19
Inventive step (IS)	Yes:	Claims	4, 5, 7-9
	No:	Claims	1-3, 6, 10-19
Industrial applicability (IA)	Yes:	Claims	1-19
	No:	Claims	

2. Citations and explanations

see separate sheet

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (SEPARATE SHEET)

International application No.
PCT/GB2004/003115

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

D1: WO-A-94/25419 (Du Pont)
D2: EP-A-1046615 (Bayer AG)

1. Claims 1-3 do not fulfil the requirements of Article 6 PCT, because these claims are not supported by the description.

   Claim 1 is directed to a process for treating a composition comprising one or more undesired compounds and one or more desired compounds. The desired compounds are said to be inorganic, the undesired compounds are not defined at all.

   The only example of the application describes the removal of odorous sulphur compounds from calcium fluoride. The application does not provide sufficient support to generalise this example to **all inorganic** compounds as desired compounds and to **all undesired** compounds. It would appear that there is only support for a main claim in which the desired compound is an alkali metal fluoride or alkaline earth fluoride as defined in claim 4 and in which the undesired compounds are defined as in claim 7.

   In fact, the current wording of the claim is such that the person skilled in the art will not be able to perform the invention over the whole of the claimed range, which is contrary to Article 5 PCT.

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1, 2, 11-13, 18 and 19 is not new in the sense of Article 33(2) PCT.

   Document D1 discloses a process for the separation of hydrogen chloride from a mixture of hydrogen chloride and a halocarbon. The mixture is extracted with a halocarbon, one of the preferred being pentafluoroethane. The hydrogen chloride is separated from the halocarbons by distillation (see claims 1-4).

The subject-matter of claims 1, 2, 11-13, 18 and 19 is not novel.

3. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 3, 6, 10, 14-17 does not involve an inventive step in the sense of Article 33(3) PCT.

3.1. Starting from document D1 as closest prior art, the only difference between claim 3 and document D1 lies in the fact that in claim 3 a fluorine inorganic material is treated, whereas in D1 a chlorine inorganic

The person skilled in the art would certainly consider the process of D1 also suitable for the purification of hydrogen fluoride. The subject-matter of claim 3 does not involve an inventive step.

3.2. It is not clear how the subject-matter of claims 6 and 10, 14-17 could form the basis for a main claim which is novel and involves an inventive step.

4. The subject-matter of claims 4 and 7 (ie a claim that is supported by the description; see 1, above), appears to be novel and involve an inventive step.

Document D2 is considered to be the closest prior art for such a claim. This document discloses the purification of alkali metal fluoride by extraction with a solvent. The solvent is, for example, dichloromethane (see paragraphs [0011] and [0012]).

The difference between such a supported claim and document D2 would lie in the fact that in such a claim the solvent would be a (hydro)fluorocarbon and the impurity would be a malodorous nitrogen or sulphur compound, whereas in document D2 the solvent is dichloromethane and the impurities are organic compounds.

The problem solved is the provision of a process to remove malodorous sulphur and/or nitrogen compounds from alkali metal or alkaline earth metal fluorides.

There is no indication in the prior art that such impurities can be removed from alkali metal or alkaline earth metal fluorides using (hydro)fluorocarbons.

The subject-matter of such a claim would therefore be novel and involve an inventive step.